

ABORIGINAL OCCUPATION IN THE LIMESTONE
CAVES AND ROCK SHELTERS OF THE LEEUWIN -
NATURALISTE REGION, WESTERN AUSTRALIA:
RESEARCH BACKGROUND AND
ARCHAEOLOGICAL PERSPECTIVE

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ABSTRACT

The palaeontological importance of limestone caves in the Leeuwin-Naturaliste Region, in Western Australia's lower South-west, was recognised early this century when abundant marsupial and other vertebrate remains, including extinct "megafauna" species, were excavated from the Mammoth Cave floor deposit. The archaeological potential of the region's caves became clear in the late 1960s, with the publication of a human tooth and other cultural material collected a decade earlier during palaeontological excavations at Devil's Lair. Radiocarbon dated archaeological evidence from the 1970s Devil's Lair excavations show that Aboriginal groups had occupied this cave intermittently *ca* 31,000 to 6500 BP (radiocarbon years "Before Present"). In the 1990s, this archaeological record of prolonged cave occupation was supplemented by similar evidence, notably hearths, stone artefacts, vertebrate food remains, from excavations at Tunnel Cave and other regional caves and rock shelters. On-going archaeological research is in part aimed at assessing the role of these occupation sites in regional hunter-gatherer land-use systems evolving from Late Pleistocene times until recent centuries. A cross-dating program underway for Devil's Lair and Tunnel Cave is aimed at comparing these sites' existing chronological sequences, based on conventional radiocarbon dates, with other kinds of radiometric assays of various samples from their floor deposits, including OSL (optically stimulated luminescence) dating of quartz sand, TlMS (thermal ionisation mass spectrometry) uranium series dating of eggshell, AMS (accelerator mass spectrometry) radiocarbon assay of emu

eggshell, and ESR (electron spin resonance) and uranium series assay of flowstone. Continuing chronological, palaeoenvironmental, biological and archaeological investigations of the Quaternary age floor deposits in Leeuwin-Naturaliste Region limestone caves and rock shelters contribute to the development of Australia's cultural and natural heritage.

INTRODUCTION

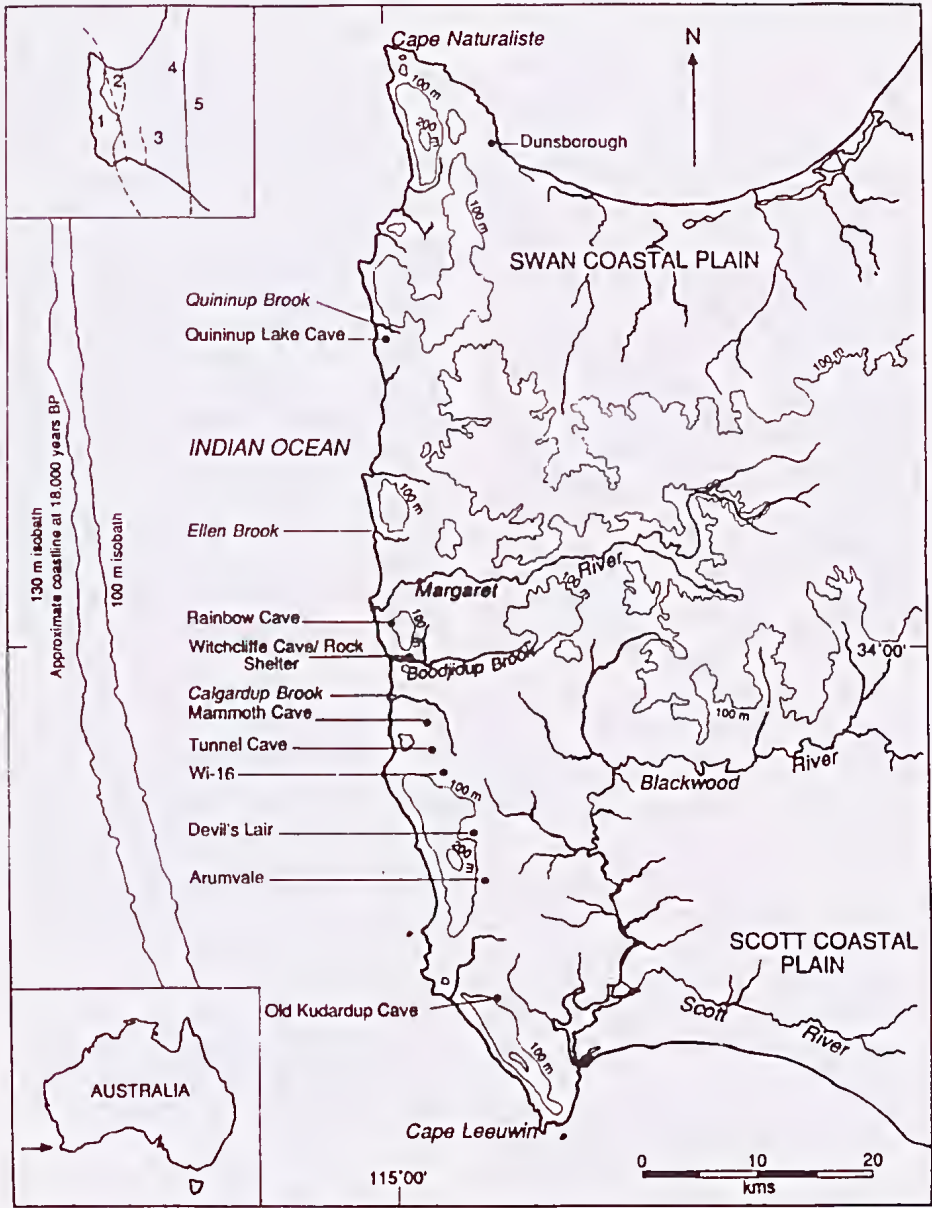
Nearly all of the hundreds of prehistoric Aboriginal occupation sites recorded in the South-west of Western Australia over the past half-century are undated surface scatters of flaked stone artefacts. Fewer than a dozen sites have occupation deposits featuring abundant faunal and other biotic remains stratigraphically associated with artefacts and hearths. Four of these exceptional sites are located in the extreme south-western corner of the South-west, referred to here as the "Leeuwin-Naturaliste Region" (Figure 1). Specifically, they comprise the sandy floor deposits of caves and rock shelters formed in Tamala Limestone capping Pre-Cambrian metamorphic rocks comprising the Leeuwin Block (Playford *et al.* 1976: 210-212), which extends from Cape Naturaliste 100 km southward to Cape Leeuwin (Figure 1, inset). The half-dozen other, mostly much smaller and less important, south-western archaeological sites yielding biotic remains are scattered across several hundred km of the region's Southern Ocean coast.

Our purpose here is to outline the history of the prehistoric investigations carried out in the caves and rock shelters of the

Leeuwin-Naturaliste Region, and to appraise prehistoric Aboriginal occupation in the region generally.

EARLY INVESTIGATIONS OF REGIONAL FOSSIL DEPOSITS

The first palaeontological excavations in the Leeuwin-Naturaliste Region were carried out in Mammoth Cave in 1904 by E. A. Le Soeuf, Director of the Perth Zoological Gardens, and T. Connolly, the cave's caretaker and tourist guide, who had accidentally discovered this cave's fossil bone bed a few years earlier. More extensive excavations at Mammoth Cave were undertaken by the WA Museum and Art Gallery during the years 1909-1915. The chief, and often the sole excavator, was Ludwig Glauert, first seconded to the Museum from the WA Mines Department, and from 1910 employed by the Museum as Assistant in Natural History and Ethnology to the Director, B. H. Woodward (Glauert 1910; 1926; 1948; Woodward 1909; 1910. In 1928, Glauert became Keeper of the Museum, and eventually was appointed Director.). These early excavations at Mammoth Cave yielded very large amounts of



DAMELLE WEST

Figure 1. The Leeuwin - Naturaliste Region showing sites and localities mentioned in the text, 100 and 200 m contour lines, and 100 and 130 m depth contours (isobaths). The inset map in the upper left hand corner of the figure shows geological features in the more general area as follows: 1. Leeuwin Block; 2. Dunsborough Fault complex; 3. southern Perth Basin; 4. Darling Fault; 5. Yilgarn Block.

marsupial and other vertebrate remains, including numerous bones of extinct, large-sized species definable as "megafauna".

Forty years passed before palaeontological investigations were again planned for caves in the Leeuwin-Naturaliste Region. In 1955, Ernest Lundelius, then a visiting Fulbright scholar from the USA, began his research into the climatic and environmental implications of Late Quaternary mammalian assemblages in Australia (Lundelius 1960; 1966). Lundelius also investigated marsupial carnivore behaviour, as suggested by the vertebrate remains accumulated in these predators' dens or lairs, which in this region are characteristically limestone caves. In obtaining fossil bone samples for his research, Lundelius dug test pits in one of the region's caves notable for its prolific vertebrate remains. This cave soon came to be known as Devil's Lair, in reference to the bones of Tasmanian Devils (*Sarcophilus harrisii*) present in its floor deposit, and because of the highly fragmented nature of the bone assemblage, typical of carrion-eaters' dens, particularly those occupied by this species.

In the 1950s, the archaeological potential of Leeuwin-Naturaliste Region caves and rock shelters was not closely considered. The published reports of the Devil's Lair excavations (Lundelius 1960; 1966) do not mention very occasional stone artefacts or a piece of baler shell that Lundelius and other excavators had recovered from the Devil's Lair

floor deposit. By the late 1960s, however, Quaternary investigations had expanded greatly in many parts of the world, including Australia, where research into Aboriginal prehistory was already benefitting substantially from the rapid development of these multi-disciplinary studies. Archaeological, geomorphological and palaeontological field investigations were under way in many parts of the continent, and new finds and radiocarbon datings were changing the framework of Aboriginal prehistory year by year. A leading researcher in these developments was Duncan Merrilees, a WA Museum Curator (Palaeontology Department, 1960-1978), and one of the first Quaternary researchers to consider the effects of prehistoric human migration and settlement on Australian fauna and landscape. In 1967, Merrilees found an adult human incisor tooth in a collection of kangaroo teeth previously excavated from Devil's Lair; not longer after this tooth was described by Davies (1968). In his classic "Man the destroyer" paper, Merrilees noted the presence of this tooth and the other cultural remains that had been recovered during the Devil's Lair palaeontological excavations of the decade before (Merrilees 1968:12).

WA MUSEUM INVESTIGATIONS AT DEVIL'S LAIR

In late 1970, partly as a result of the publication of the Devil's Lair cultural finds, and partly in response to the greatly increased

general awareness of the potential duration and complexity of Aboriginal prehistory, the WA Museum began a series of archaeological excavations of the cave's floor deposit. The Museum team began its investigation of the Devil's Lair floor deposit by carrying out "salvage" excavations in two test pits left open since the 1950s (Dortch and Merrilees 1971). From the larger of these test pits (shown as Trench 1 in Figure 2), Lundelius had obtained a pair of radiocarbon dates based on charcoal samples. The stratigraphically uppermost sample, dated *ca* 8500 BP (radiocarbon years "Before Present", referring to uncalibrated, conventional radiocarbon dates), came from just beneath the flowstone capping of

the floor deposit. The second sample, dated *ca* 12,000 BP, came from the lower part of this test pit, at a depth of 1.2 m below surface. The Museum team excavated this test pit nearly 1 m deeper, and having established that stone and bone artefacts were *in situ* in undisturbed deposit, ended their dig, and re-filled the pit. They then removed collapsed sediments from a nearby, smaller test pit, dug by persons unknown, and excavating a few cm deeper in the floor of this pit again found artefacts in undisturbed cave floor sediments. This second test pit, in 1970 labelled "small excavation", eventually became the "main excavation" of the Museum investigation (Figure 2; Dortch

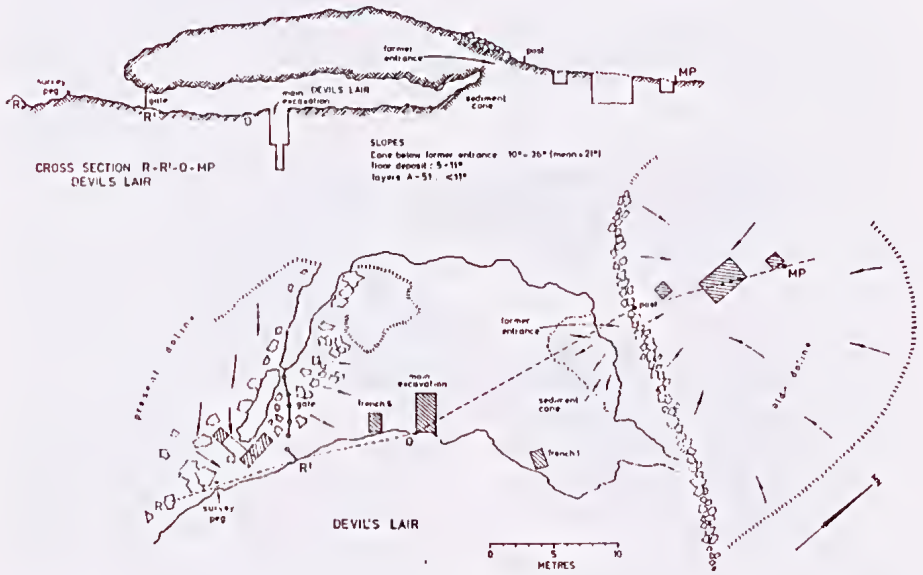


Figure 2. Cross-section and plan of Devil's Lair (after Williamson, Loveday and Loveday 1976).

and Merrilees 1971; 1973).

The systematic, long term excavations at Devil's Lair were mainly directed by Merrilees, in cooperation with one of us (CED, who then and now is a WA Museum Curator) and departmental staffers, J. Balme and J. K. Porter. The Museum team was assisted by several volunteers, notably the vertebrate palaeontologist, A. Baynes, then a Ph.D. scholar at the University of Western Australia. The seven excavation seasons at Devil's Lair, which lasted from two to six weeks each, ended in 1977, though investigations in the cave have continued intermittently since then, with the final test excavations at the base of the floor deposit being directed by ourselves in March 1997. At this point, the "main excavation" has been dug to a depth of 7.1 m below Cave Datum (i.e. 6.6 m below the cave floor), and the total volume of sediments excavated and sieved is more than 40 m³. The narrow lower part of the excavation is shown schematically in Figure 2. Exposed at the base of this excavation is very thick flowstone, which we have not penetrated.

Since the mid-1970s, investigators have published 26 research papers and other works on the Devil's Lair depositional, cultural, faunal, and chronometric sequences. Included are papers describing and interpreting the cave's geomorphological history, the nature and stratigraphy of its sandy floor deposit, the bones and other fossil fauna, the rare human remains and the relatively sparse,

though very diverse stone and bone artefact assemblages, and the petrology and likely sources of the stone artefacts recovered in the archaeological excavations (Allbrook 1976; Baird 1986; Balme 1978; 1979; 1980a; 1980b; Balme *et al.* 1978; Baynes *et al.* 1975; Bednarik 1997; David 1993; Dortch 1974; 1976a; 1976b; 1979a; 1979b; 1979c; 1980; 1984; 1986; Dortch and Dortch 1996; Freedman 1976; Glover 1974; 1979; Merrilees 1975; 1979; Shackley 1978).

TUNNEL CAVE AND OTHER RECENT ARCHAEOLOGICAL INVESTIGATIONS OF LEEWIN-NATURALISTE REGION

CAVES AND ROCK SHELTERS

In 1990 and 1991, I. Lilley, a University of Western Australia lecturer in archaeology, recorded hearths, quartz artefacts, and small amounts of marine mollusc shell, fish and terrestrial vertebrate remains at Rainbow Cave, near the mouth of the Margaret River, 20 km North of Devil's Lair (Figure 1). These finds, radiocarbon dated *ca* 340–4200 BP, are the first evidence of Late Holocene Aboriginal occupation of Leeuwin-Naturaliste Region caves and shelters (Lilley 1993: 36–39).

Archaeological investigations of prehistoric occupation deposits in the region's caves were again resumed in 1993, when one of us (JD) studied plans of 270 cave and rock shelter sites mostly compiled by B. Loveday, a Perth-based speleologist with many years of

caving experience. As part of his Ph.D. research at the Centre for Archaeology, University of Western Australia, J. Dortch surveyed 77 cave chambers and rock shelters before deciding that at least 25 of them could have been suitable for human occupation. The most promising site was Tunnel Cave, located eight km North of Devil's Lair. Other caves thought likely to have been used by Aboriginal hunter-gatherers are Wi-16, Quininup Lake Cave, and Witchcliffe Cave (Figure 1). However, corings in the floor deposits of the two former

caves and test excavation in the latter failed to yield any archaeological remains (Dortch 1996).

In April 1993, J. Dortch's test-excavation inside the wide shelter entrance at Tunnel Cave revealed numerous hearths, stone artefacts, and faunal remains deriving from many episodes of human occupation. Charcoal samples collected from the main part of the occupational sequence in the lower 2 m of the deposit (Figure 3), and dated by conventional radiocarbon method, range in age from ca 22,000 to 8000 BP (Dortch 1994;

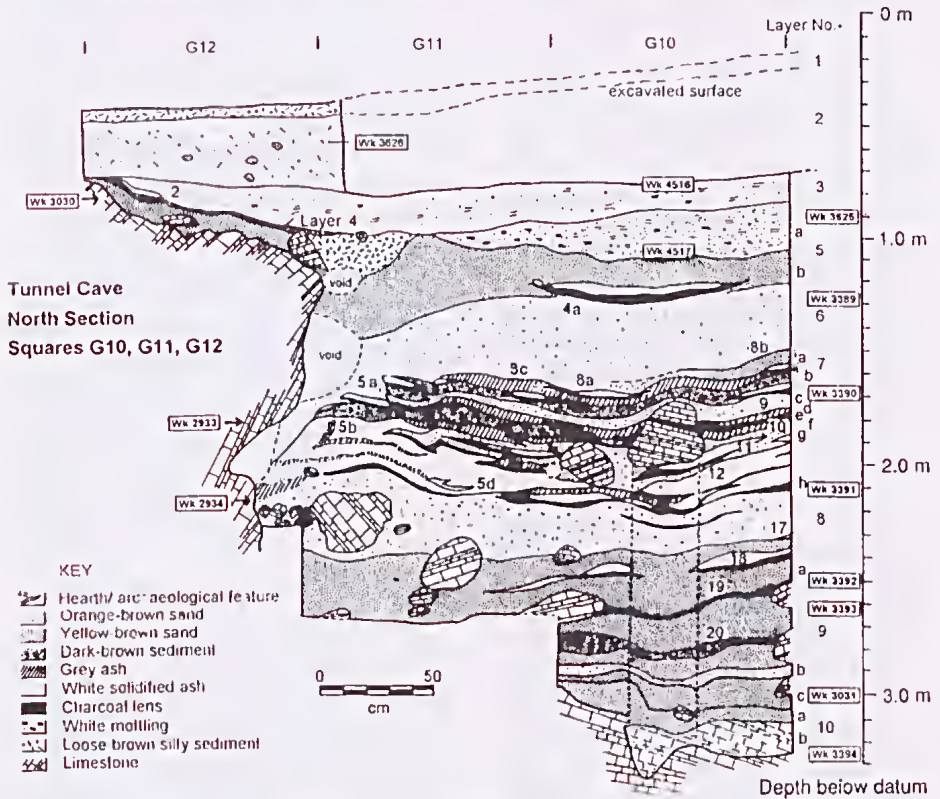


Figure 3. Trench section, north face of squares G10, G11 and G12, Tunnel Cave. The vertical pair of dotted lines indicate a column of sediment supporting a large rock.

1996: Table 2). However, in the upper part of the Tunnel Cave deposit, a handful of stone artefacts was stratigraphically associated with a hearth, from which a charcoal sample is radiocarbon dated *ca* 1300 BP. This record supplements the longer but much sparser occupational record from Devil's Lair, which spans about 25,000 years, ending about 6500 BP, as shown by some thirty radiocarbon dates from the main excavation (Dortch 1979b; 1984; Dortch and Dortch 1996).

In 1995, J. Dortch excavated at Witchcliffe Rock Shelter, which is adjacent to Witchcliffe Cave and overlooks a stream valley, a few km south of Rainbow Cave. There he recorded hearths, and collected quartz artefacts, vertebrate remains, including fish, and marine and freshwater mollusc shell in a charcoal-rich deposit radiocarbon dated 700–400 BP (Dortch 1996: Figure 5, Table 3). Human occupation of this site is contemporaneous with the upper part of the occupational sequence at Rainbow Cave, and the stone artefacts and faunal assemblages from the two sites are similar.

Several other regional caves have yielded artefacts or other evidence for prehistoric human occupation. Very occasional stone artefacts and human bones have been recovered from Skull Cave, which has a cone-shaped deposit at the base of a vertical shaft (Porter 1979). Human bones have also been collected from the sediment cone below the vertical entrance to Strong's Cave near Devil's Lair (Merrilees 1968: 12). Archer *et al.* (1980) argue that

several limb bones among the "megafaunal" vertebrate remains excavated by Glauert from Mammoth Cave have been cut, broken or burnt by human beings, though that cave has yielded no other archaeological evidence. No Aboriginal painted rock art had been known from the Leeuwin-Naturaliste Region until the 1980s, when speleologists identified two human hand stencils in red ochre on the wall of Old Kudardup Cave (Morse 1984). However, of great archaeological importance, and of even greater significance in terms of present-day Aboriginal spirituality, are regionally unique engravings of animal tracks and other motifs in a sheet of lacustrine limestone exposed in a paddock near the Scott River, 40 km south-east of Devil's Lair (Figure 1; Clarke 1983).

OCCUPATIONAL EVIDENCE

Recovered from the fireplaces and fire pits at both Devil's Lair and Tunnel Cave are shattered and charred bones of marsupials and other animals interpreted as food remains. The several dozen retouched (*i.e.* purposefully edge-trimmed) stone artefacts interpreted as "tools" collected from Devil's Lair support the interpretation of occupation by groups engaged in food preparation, the manufacture of wooden implements and other "hearthside" activities. For reasons unknown, almost no retouched pieces are present among the approximately 1500 stone artefacts associated with the two

hearth complexes and several isolated hearths at Tunnel Cave, though the older hearth complex, radiocarbon dated 16–17,000 BP, did yield four “points” shaped on macropod fibulae, which are similar to some of the dozen bone points from Devil’s Lair, dated ca 12,000 to 22,000 BP (Dortch 1984). At both sites, human occupiers sometimes were family groups, judging by the very occasional human deciduous (juvenile) teeth recovered (e.g. Freedman 1976; Dortch 1996). Occupation is assumed to have been very intermittent, perhaps only during wet or cold weather. Numerous fragments of Emu (*Dromaius novaehollandiae*) eggshell in many layers in both sites’ floor deposits suggest winter occupation, since this species lays eggs only during that season. Other faunal remains may show whether the caves were occupied during other seasons. Excavated from Pleistocene layers at Devil’s Lair are three bone beads (Dortch 1979a) and two other perforated objects interpreted as pendants (Dortch 1980; Bednarik 1997), as well as three limestone fragments that were thought to be intentionally incised (Dortch 1976b; 1984).

OCCUPATIONAL HIATUS?

Presently available radiocarbon dates show a gap of several millennia between, on the one hand, the mainly Late Pleistocene occupational sequences at Devil’s Lair and Tunnel Cave, and, on the other, the Late Holocene occupational evidence at the latter site, and at Rainbow Cave and

Witchcliffe Rock Shelter. However, at Devil’s Lair occupation seems to have ceased simply because a former entrance became blocked, thus preventing people from entering the cave perhaps not long after 6500 BP. Devil’s Lair may have remained entirely sealed until a few centuries ago, when roof collapse created the doline as it is today, thus again opening up the existing chamber. (Figure 2 shows the prehistoric or “former” entrance blocked by a cone of sediment at the “rear” of this cave chamber. The present-day entrance is labelled “gate”. No artefacts or faunal remains were recovered from the two 1 m-deep test trenches indicated in the doline just outside this entrance.)

It is not clear whether the above noted apparent hiatus of more than 6000 radiocarbon years (8000 to ca. 1300 BP) in Aboriginal occupation at Tunnel Cave is regionally significant. Nor is it known why Witchcliffe Rock Shelter apparently was occupied only during the past few hundred years. However, several Leeuwin-Naturaliste Region open-air sites – Calgardup Brook, Dunsborough, and Ellen Brook – and also Rainbow Cave, provide a range of radiocarbon dates ca 4000–5000 BP, showing that human groups were present here during the Middle Holocene, when regional caves and rock shelters may or may not have been as frequently occupied as they had been during the Late Pleistocene (Figure 1; Dortch *et al.* 1984: Table 2; Ferguson 1980; Lilley 1993: Table 1). Middle to Late Holocene Aboriginal occupation at the first

two named open-air sites and a number of others in the region (e.g. at the Arumvale site: Dortch and McArthur 1985) is also implied by surface and excavated stone artefact assemblages featuring geometric microliths and other particular kinds of flaked stone "small tools" that across temperate Australia are characteristic of sites of this age. Evidence for the presence of Aboriginal groups in the Leeuwin-Naturaliste Region during the terminal prehistoric to historic periods is provided by very recent radiocarbon dates from Ellen Brook and Rainbow Cave (Bindon and Dortch 1982; Lilley 1993: Table 1), by Aboriginal artefacts flaked from European bottle glass found at Ellen Brook and elsewhere, by a number of 17th century and early 19th century European accounts describing encounters with Aborigines (e.g. Baudin 1974: 173-174), and by an oral tradition of the sightings of 19th century or earlier European sailing ships recounted by Aboriginal elders presently living in the region.

LEEWIN-NATURALISTE
REGION CAVES AND ROCK
SHELTERS AS COMPONENTS
WITHIN HUNTER-GATHERER
LAND-USE SYSTEMS

Despite many millennia of episodic use, cave occupation sites may have been only of relatively minor importance in presumably complex regional hunter-gatherer subsistence and settlement patterns, in which hunter-gatherer groups exploited diverse

environmental zones within and outside the Leeuwin-Naturaliste Region. This is suggested by archaeological survey showing major sites situated near diverse habitats rich in food resources here and in other parts of the South-west, and by ethno-historical accounts attesting to the very wide variety of plant and animal foods eaten by south-western Aboriginal hunter-gatherers at the time of European colonisation in the 19th century (Meagher 1974). An on-going research aim then is to assess the functions of both cave and open-air occupation sites as components in dynamically shifting Aboriginal land use systems persisting perhaps continuously in the region from the Late Pleistocene until the historic period.

Archaeological evidence for the long sequence of human occupation in the Leeuwin-Naturaliste Region mostly coincides with the Late Pleistocene to Middle Holocene time of glacio-eustatic low sea levels, when the region's western coast would have been some 10-40 km further West. During the height of the last glacial maximum (LGM, ca 18 000 years ago) sea level is estimated to have been ca 130 m below its present height (Chappell and Shackleton 1986). The western coastline of the Leeuwin-Naturaliste Region would have been situated approximately along the 100 to 130 m isobaths shown in Figure 1 (cf. Balme *et al.* 1978: Figure 11). Human occupation of this or other parts of the region's

emergent shelf is implied at both Tunnel Cave and Devil's Lair and at dozens of open-air sites in this region and throughout the western parts of the entire Perth Basin by the presence of numerous artefacts flaked of a distinctive form of Eocene fossiliferous chert that was probably quarried from outcrops on the emergent shelf (Glover 1974; 1984; Glover and Lee 1984). Some of the Leeuwin-Naturaliste Region open-air sites, exposed in coastal dune blow-outs or road cuttings in dunes, notably Dunsborough, Quininup Brook, Ellen Brook and Arumvale, have yielded hundreds of these chert artefacts (Figure 1; Bindon and Dortch 1982; Dortch and McArthur 1985; Ferguson 1980; 1981). Very occasional marine mollusc shell fragments have also been collected from the Late Pleistocene deposits at Devil's Lair and Tunnel Cave (Dortch 1996; Dortch *et al.* 1984; Merrilees 1968: 12). This evidence clearly suggests that the emergent continental shelf was frequented by human groups during times of glacio-eustatic low sea levels.

There is as yet little other evidence suggesting the activities and movements of Late Pleistocene and later hunter-gatherer groups when they were not occupying the cave and open-air sites discussed here, which are located on or near the present coasts of the Leeuwin-Naturaliste Region. For example, despite mainly brief searches carried out sporadically since the 1970s, relatively few prehistoric sites have been recorded in the lower

reaches of the Blackwood River valley 10–30 km East of Devil's Lair and Tunnel Cave, or in the western end of the Scott Coastal Plain to the South-east (Figure 1). This scarcity of evidence probably reflects the nature of the terrain rather than a genuine lack of sites, since most open-air campsites located in these districts are likely to be buried in colluvial sediments or dunes, or concealed by thick vegetation. This is suggested by the very different archaeological record from the southern end of the Swan Coastal Plain, where land clearance, road-building and other modern developments have exposed numbers of prehistoric sites. For example, the Dunsborough town site is built over a complex of open-air camp sites represented by numerous stone artefacts *in situ* in dune soils. Two of these sites provide a range of radiocarbon dates *ca* 4500 to 12,000 BP (Ferguson 1980; unpublished data: CED, JD).

Prehistoric land-use in the Leeuwin-Naturaliste Region cannot, in our opinion, be adequately assessed without taking into account the exploitable habitats that once existed on the emergent continental shelf to the West, North and South of the present-day coast, or the low-lying areas of resource-rich wetland and woodland on the southern Swan and Scott Coastal Plains, as well as the range of habitats in the largely forested Blackwood River valley. This view of the problem has a different perspective from that of Lilley, who based his assessment

of prehistoric occupation patterns in the region on a series of "transect" surveys for sites from the upper reaches of the Margaret River directly westward to the present coast (Figure 1; Lilley 1993: 35-36; 39-40).

CURRENT RESEARCH

Comparison of the cultural, faunal, environmental and chronometric records from Devil's Lair and Tunnel Cave is now underway. With the advice and help of other archaeologists, we are preparing a long overdue inventory and review of the stone and bone artefact assemblages from Devil's Lair. One of us (JD) and S. Burke are identifying the species of charcoal fragments collected from Tunnel Cave and Devil's Lair, with the aim of determining local vegetation associations throughout the periods of deposition at both sites. As yet, pollen studies have not been carried out at either Devil's Lair or Tunnel Cave, though pollen and spores have been identified in sediment samples from the former site's floor deposit.

Of crucial importance in establishing more detailed chronologies for the depositional and occupational sequences for both sites, and for Devil's Lair in particular, is the cross-dating program being carried out by R. G. Roberts, School of Earth Sciences, La Trobe University, and other specialists. The existing conventional radiocarbon dating sequences for both sites' floor deposits will soon be

matched by a series of OSL (optically stimulated luminescence) age assays done on quartz sand samples, as well as by AMS (accelerator mass spectrometry) radiocarbon dating of Emu eggshell and charcoal samples. The AMS dating, which is the work of G. Miller of the University of Colorado, and J. Magee, Research School of Asian and Pacific Studies, Australian National University, is part of their investigation of AAR (amino acid racemization) in Emu eggshell fragments collected from the cave floor deposits, with the aim of determining changes in temperature and environment through the periods of deposition. Projected also are dating by TIMS (thermal ionisation mass spectrometry) uranium series of eggshell, and uranium series and ESR (electron spin resonance) dating of flowstone (speleothem) layers from the excavated deposits. Devil's Lair sediment samples were a decade ago subjected to palaeomagnetism assay, though with equivocal results.

THE CULTURAL AND SCIENTIFIC SIGNIFICANCE OF CAVE AND ROCK SHELTER SITES IN THE LEEUWIN-NATURALISTE REGION

Since the 1980s, Nyoongar (south-western Aboriginal) communities have come to regard Devil's Lair and other sites in the Leeuwin - Naturaliste Region as highly significant components in their cultural heritage. Nyoongar young people have participated in

the excavations at Devil's Lair, Tunnel Cave, Witchcliffe Rock Shelter and other sites in the lower South-west. Many other Australians are also aware that limestone caves in this region are an important part of the nation's cultural and natural heritage, and Devil's Lair is internationally known.

The Devil's Lair and Tunnel Cave excavations provide scope for inter-disciplinary investigations aimed at reconstructing the prehistoric past, based mainly on the findings of archaeologists, palaeontologists, geologists and radiometric dating specialists. Until other kinds of sites are identified and investigated, limestone cave and rock shelter sites, notably the ones in the Leeuwin - Naturaliste Region, will continue to provide a large part of the chronological, palaeoenvironmental, biological and cultural data for the pre-history of Western Australia's South-west.

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